

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TAYLOR R. EFLAND,
MILTON L. BUSCHBOM
and SAMEER PENDHARKAR

MAILED

OCT 28 2005

U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Appeal No. 2005-0888
Application No. 10/039,663

HEARD: October 25, 2005

Before OWENS, JEFFREY T. SMITH, and PAWLIKOWSKI, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal is from a rejection of claims 1-5, 7-9, 11, 13, 15 and 20-23. Claims 6, 10, 12 and 24-28 have been canceled. Claims 14 and 16-19 stand objected to but allowable if rewritten in independent form. Claims 29-34 have been allowed.

THE INVENTION

The appellants claim an integrated circuit chip having power distribution lines connected to active components thereunder by metal-filled vias. Claim 1 is illustrative:

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1. An integrated circuit chip mounted on a leadframe, said leadframe having a plurality of segments, comprising:

a network of power distribution lines deposited on the surface of said chip over active components of said circuit;

said lines connected vertically to said components by metal-filled vias, and also to said segments by conductors; and

the majority of said lines patterned as straight lines between said vias and said conductors, respectively, thereby minimizing the distance for power delivery between a selected segment and one or more corresponding active components, to which said power is to be delivered.

THE REFERENCES

| | | |
|-----------------|-----------|---------------|
| Tani | 5,468,993 | Nov. 21, 1995 |
| Yamasaki et al. | 5,973,554 | Oct. 26, 1999 |
| (Yamasaki) | | |

Stanley Wolf and Richard N. Tauber (Wolf), *Silicon Processing for the VLSI Era - Volume 1: Process Technology* 857-58 (Lattice Press, 2nd ed. 2000).

THE REJECTIONS

The claims stand rejected as follows: claim 1 under 35 U.S.C. § 102(b) as being anticipated by Yamasaki; claims 2 and 3 under 35 U.S.C. § 103 as being obvious over Yamasaki; claims 4, 5, 7, 8, 11, 15, 20, 21 and 23 under 35 U.S.C. § 103 as being obvious over Yamasaki in view of Tani; claim 9 under 35 U.S.C. § 103 as being obvious over Yamasaki in view of Tani and the admitted prior art;

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and claims 13, 20 and 22 under 35 U.S.C. § 103 as being obvious over Yamasaki in view of Tani and Wolf.¹

OPINION

We reverse the aforementioned rejections. We need to address only the independent claims, i.e., claims 1 and 4, which require that components over which power distribution lines (claim 1) or power distributors (claim 4) are deposited are active components.

Yamasaki discloses power supply lines (4 and 5) deposited over an MOS transistor (70) (col. 8, lines 15-36; figure 2B).

The examiner argues, in reliance upon a dictionary definition which states that a transistor is "an active semiconductor device", that Yamasaki's MOS transistor is an active component (answer, pages 11-12).

An active component has been defined as:

[ELEC] In the phasor representation of quantities in an alternating-current circuit, the component of current, voltage, or apparent power which contributes power, namely, the active current, active voltage, or active power. Also known as power component. [ELECTR] See active element.^[2]

¹ A rejection of claim 2 under 35 U.S.C. § 102(b) is withdrawn in the examiner's answer (page 3).

² *McGraw-Hill Dictionary of Scientific and Technical Terms* 28 (Sybil P. Parker ed., McGraw-Hill 5th ed. 1994). An active element is defined as: "[ELECTR] Any generator of voltage or current in an impedance network. Also known as active

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and

1. An electrical or electronic element capable of controlling voltages or currents to produce gain or switching action in a circuit (e.g., transistor, vacuum tube, or saturable reactor). Also called active device, or active element. 2. A device, the output of which is dependent on a source of power other than the main input signal.^[3]

A passive element has been defined as:

[ELEC] An element of an electric circuit that is not a source of energy, such as a resistor, inductor, or capacitor. Also known as passive component.^[4]

and

1. A parasitic element. 2. A circuit element with no source of energy (e.g., a resistor, capacitor, inductor, etc.).^[5]

Yamasaki's MOS transistor functions as a capacitor (abstract, lines 1-2; col. 8, line 58; col. 9, lines 11-12; col. 10, lines 29-30) and, therefore, is by definition a passive element or component rather than an active component. The examiner has not established that "active component", as that term would have been most broadly

component." *Id.* at 29. A copy of each dictionary definition cited by the board is provided to the appellants with this decision.

³ Rudolf F. Graf, *Modern Dictionary of Electronics* 16 (Howard W. Sams & Co. and The Bobbs-Merrill Co. 1972).

⁴ *McGraw-Hill Dictionary*, *supra* note 2, at 1455.

⁵ *Modern Dictionary of Electronics*, *supra* note 3, at 410.

construed by one of ordinary skill in the art in view of the appellants' specification, encompasses a capacitor, or that one of ordinary skill in the art would have considered Yamasaki's capacitor to be an active component.

The examiner argues that "a transistor is an active element regardless of how it is named" (answer, page 11), which is incorrect. As indicated by the above definitions, to be an active element Yamasaki's MOS transistor must be capable of contributing power or controlling voltages or currents to produce gain or switching action. The examiner has not established that Yamasaki's MOS transistor, which has its gate connected to a power supply and both its source and drain connected to ground (col. 8, lines 28-36 and 57-67; figures 2B and 3), is capable of functioning in that manner.

The examiner, therefore, has not established a prima facie case of anticipation or obviousness of the appellants' claimed invention.⁶

⁶ The examiner does not rely upon Tani, Wolf or the admitted prior art for any disclosure that remedies the above-discussed deficiency in Yamasaki as to the independent claims.

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DECISION

The rejections of claim 1 under 35 U.S.C. § 102(b) over Yamasaki, claims 2 and 3 under 35 U.S.C. § 103 over Yamasaki, claims 4, 5, 7, 8, 11, 15, 20, 21 and 23 under 35 U.S.C. § 103 over Yamasaki in view of Tani, claim 9 under 35 U.S.C. § 103 over Yamasaki in view of Tani and the admitted prior art, and claims 13, 20 and 22 under 35 U.S.C. § 103 over Yamasaki in view of Tani and Wolf, are reversed.

REVERSED

Terry J. Owens)
TERRY J. OWENS)
Administrative Patent Judge)
)
)
Jeffrey T. Smith)
JEFFREY T. SMITH)
Administrative Patent Judge)
) BOARD OF PATENT
) APPEALS
) AND
) INTERFERENCES
)
Beverly A. Pawlikowski)
BEVERLY A. PAWLIKOWSKI)
Administrative Patent Judge)

TJO/sld

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Application No. 10/039,663

TEXAS INSTRUMENTS INCORPORATED
P.O. BOX 655474, M/S 3999
DALLAS, TX 75265

1994

McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS

Fifth Edition

Sybil P. Parker
Editor in Chief

McGraw-Hill, Inc.

New York San Francisco Washington, D.C.
Auckland Bogotá Caracas Lisbon London Madrid Mexico City Milan
Montreal New Delhi San Juan Singapore Sydney Tokyo Toronto

To bring into existence by official order a unit, post, camp, station, base, or shore activity which has previously been constituted and designated by name or number, or both, so that it can be organized to function in its assigned capacity. 2. To prepare for active service a naval ship or craft which has been in an inactive or reserve status. [PHYS] To start activity or motion in a device or material. { 'ak-tə,vād'ēd } *[ə'lüm-ənēt]*

activated alumina [MATER] Highly porous, granular aluminum oxide that preferentially absorbs liquids from gases and vapors, and moisture from some liquids; also used as a catalyst or catalyst carrier, as an absorbent to remove fluorides from drinking water, and in chromatography. { 'ak-tə,vād'ēd 'lüm-ənēt }

activated bauxite See filter bauxite. { 'ak-tə,vād'ēd 'bōk-sīt }

activated carbon [MATER] A powdered, granular, or pelleted form of amorphous carbon characterized by very large surface area per unit volume because of an enormous number of fine pores. Also known as activated charcoal. { 'ak-tə,vād'ēd 'kär-bōn }

activated cathode [ELECTR] A thermionic cathode consisting of a tungsten filament to which thorium has been added, and then brought to the surface, by a process such as heating in the absence of an electric field in order to increase thermionic emission. { 'ak-tə,vād'ēd 'kath-ōd }

activated charcoal See activated carbon. { 'ak-tə,vād'ēd 'char-kōl }

activated clay [MATER] Bentonite, or other clay, treated with acid to enhance its ability to absorb or bleach. { 'ak-tə,vād'ēd klā }

activated coal plough [MIN ENG] A type of power-operated cutting blade used for coal seams too hard to be sheared by a normal blade. { 'ak-tə,vād'ēd 'kōl ,plōu }

activated complex [PHYS CHEM] An energetically excited state which is intermediate between reactants and products in a chemical reaction. Also known as transition state. { 'ak-tə,vād'ēd 'kām-plekss }

activated diffusion [SOLID STATE] Movement of atoms, ions, or lattice defects across a potential barrier in a solid. { 'ak-tə,vād'ēd di'fyü-zhēn }

activated macrophage [IMMUNOL] A macrophage whose ability to destroy microbes or other cells has been enhanced because of stimulation by a lymphokine. { 'ak-tə,vād'ēd 'mak-rō-fāj }

activated rosin flux [MATER] Soldering flux containing activating agents which promote wetting by the solder. { 'ak-tə,vād'ēd 'rāz-n 'fłks }

activated sintering [MET] Sintering of a metal powder compact in contact with a gaseous atmosphere which reacts with the metal surfaces and enhances the joining of metal particles. { 'ak-tə,vād'ēd 'sintər-ēg }

activated sludge [CIV ENG] A semiliquid mass removed from the liquid flow of sewage and subjected to aeration and aerobic microbial action; the end product is dark to golden brown, partially decomposed, granular, and flocculent, and has an earthy odor when fresh. { 'ak-tə,vād'ēd 'slēj }

activated-sludge effluent [CIV ENG] The liquid from the activated-sludge treatment that is further processed by chlorination or by oxidation. { 'ak-tə,vād'ēd ,slēj 'ef-lü-ənt }

activated-sludge process [CIV ENG] A sewage treatment process in which the sludge in the secondary stage is put into aeration tanks to facilitate aerobic decomposition by microorganisms; the sludge and supernatant liquor are separated in a settling tank; the supernatant liquor or effluent is further treated by chlorination or oxidation. { 'ak-tə,vād'ēd ,slēj 'prä,səs }

activating enzyme [BIOCHEM] An enzyme that catalyzes a reaction involving adenosinetriphosphate and a specific amino acid to give a product that subsequently reacts with a specific transfer ribonucleic acid. { 'ak-tə,vād'ēd 'en,zim }

activating reagent [MATER] Material added to another material or mixture so that a physical or chemical change will take place more rapidly or completely. { 'ak-tə,vād'ēd ,rē'ā-jānt }

activating receptor [PHYSIO] A sense organ at the end of a nerve that triggers a specific response when it is stimulated. { 'ak-tə,vād'ēd rā'sept-ər }

activation [CHEM] Treatment of a substance by heat, radiation, or activating reagent to produce a more complete or rapid chemical or physical change. [ELEC] The process of adding liquid to a manufactured cell or battery to make it operative. [ELECTR] The process of treating the cathode or target of an

electron tube to increase its emission. Also known as sensitization. [MET] 1. A process of facilitating the separation and collection of ore powders by the use of substances which change the response of the particle surfaces to a flotation fluid. 2. A process that increases the rate of pressing and heating a metal powder into cohesion. [MOL BIO] A change that is induced in an amino acid before it is utilized for protein synthesis. [NUCLEO] The process of inducing radioactivity by bombardment with neutrons or with other types of radiation. [PHYSIO] The designation for all changes in the ovum during fertilization, from sperm contact to the dissolution of nuclear membranes. { 'ak-tə,vā-shən }

activation analysis [NUCLEO] A method of chemical analysis based on the detection of characteristic radionuclides following a nuclear bombardment. Also known as radioactivity analysis. { 'ak-tə,vā-shən ē'nal-ə-sēs }

activation cross section [NUC PHYS] The cross section for formation of a radionuclide by a particular interaction. { 'ak-tə,vā-shən 'krōs ,sek-shən }

activation energy [PHYS CHEM] The energy, in excess over the ground state, which must be added to an atomic or molecular system to allow a particular process to take place. { 'ak-tə,vā-shən 'ēn-ərjē }

activation record [COMPUT SCI] A variable part of a program module, such as data and control information, that may vary with different instances of execution. { 'ak-tə,vā-shən 'rek-ərd }

activator [CHEM] 1. A substance that increases the effectiveness of a rubber vulcanization accelerator; for example, zinc oxide or litharge. 2. A trace quantity of a substance that imparts luminescence to crystals; for example, silver or copper in zinc sulfide or cadmium sulfide pigments. [GEN] A molecule that modifies a repressor in a way that enables it to stimulate operon transcription. [GRAPHICS] See accelerator. { 'ak-tə,vād'ēr }

activator ribonucleic acid [GEN] Ribonucleic acid molecules which form a sequence-specific complex with receptor genes linked to producer genes. { 'ak-tə,vā-tər 'ribō,nū,kliē-ik 'as-əd }

active accommodation [CONT SYS] The alteration of preprogrammed robotic motions by the integrated effects of sensors, controllers, and the robotic motion itself. { 'ak-tiv ,ā,käm-ə'dā-shən }

active anaphylaxis [IMMUNOL] The allergic response following reintroduction of an antigen into a hypersensitive individual. { 'ak-tiv 'an-ə-fə'lak-sēs }

active antiroll system [NAV ARCH] A system of antiroll tanks in a ship in which pumps are used to transfer the liquid, through a connecting channel, from one tank in a pair to the other. { 'ak-tiv ,ān-tē'rol 'sistēm }

active area [ELECTR] The area of a metallic rectifier that acts as the rectifying junction and conducts current in the forward direction. { 'ak-tiv 'erē-ə }

active balance [COMMUN] Summation of all return currents, in telephone repeater operation, at a terminal network balanced against the impedance of the local circuit or drop. { 'ak-tiv 'bal-əns }

active center [ASTRON] A localized, transient region of the solar atmosphere in which sunspots, faculae, plages, prominences, solar flares, and so forth are observed. [BIOCHEM] 1. A flexible portion of an enzyme that binds to the substrate and converts it into the reaction product. 2. In carrier and receptor proteins, the portion of the molecule that interacts with the specific target compounds. [CHEM] 1. Any one of the points on the surface of a catalyst at which the chemical reaction is initiated or takes place. 2. See active site. { 'ak-tiv 'sen-tər }

active chaff [ORD] An expendable battery-powered jammer, usually supported by parachute or balloon, dropped by aircraft to saturate enemy radars or produce delayed false returns when triggered by enemy radars. { 'ak-tiv 'chaf }

active communications satellite [AERO ENG] Satellite which receives, regenerates, and retransmits signals between stations. { 'ak-tiv kə,myü-nə'kā-shən'zad-ə,lit }

active component [ELEC] In the phasor representation of quantities in an alternating-current circuit, the component of current, voltage, or apparent power which contributes power, namely, the active current, active voltage, or active power. Also known as power component. [ELECTR] See active element. { 'ak-tiv kəm'pō-nənt }

active computer [COMPUT SCI] When two or more computers

be installed, the one that is on-line and processing data. ('ak-tiv 'kən-pyūtōr)

active controls technology [AERO ENG] The development of special forms of augmentation systems to stabilize airplane configurations and to limit, or tailor, the design loads that the airplane structure must support. ('ak-tiv kən-trōlz ,tek'näl-ōr)

active-cord mechanism [MECH ENG] A slender, chainlike grouping of joints and links that makes active and flexible windings under the control of actuators attached along its body. ('ak-tiv 'kōrd'mek'ə,nizəm)

active current [ELEC] The component of an electric current in a branch of an alternating-current circuit that is in phase with the voltage. Also known as watt current. ('ak-tiv 'kərənt)

active detection system [ENG] A guidance system which emits energy as a means of detection; for example, sonar and radar. ('ak-tiv dī'tek-shən,sistəm)

active device [ELECTR] A component, such as an electron tube or transistor, that is capable of amplifying the current or voltage in a circuit. ('ak-tiv dī'veis)

active door See active leaf. ('ak-tiv 'dōr)

active earth pressure [CIV ENG] The horizontal pressure that an earth mass exerts on a wall. ('ak-tiv 'ərth 'preshər)

active electric network [ELEC] Electric network containing one or more sources of energy. ('ak-tiv ə'lek-trik 'net,wərk)

active electronic countermeasures [ELECTR] The major subdivision of electronic countermeasures that concerns electronic jamming and electronic deceptions. ('ak-tiv ə'lek-trā-nik 'kaunt-ər,mezh-ərz)

active element [ELECTR] Any generator of voltage or current in an impedance network. Also known as active component. (NUC PHYS) A chemical element which has one or more radioactive isotopes. ('ak-tiv 'el-ə-mənt)

active entry [MIN ENG] An entry in which coal is being mined from a portion or from connected sections. ('ak-tiv 'entrē)

active file [COMPUT SCI] A collection of records that is currently being used or is available for use. ('ak-tiv 'fil)

active filter [ELECTR] A filter that uses an amplifier with conventional passive filter elements to provide a desired fixed or tunable pass or rejection characteristic. ('ak-tiv 'filter)

active front [METEOROL] A front, or portion thereof, which produces appreciable cloudiness and, usually, precipitation. ('ak-tiv front)

active galaxy [ASTRON] A galaxy whose central region exhibits strong emission activity, from radio to X-ray frequencies, probably as a result of gravitational collapse; this category includes M82 galaxies, Seyfert galaxies, N galaxies, and possibly quasars. ('ak-tiv 'gal-ək-sē)

active glacier [HYD] A glacier in which some of the ice is flowing. ('ak-tiv 'glāshər)

active homing [NAV] 1. The homing of an aerodynamic missile by radar, in which radio signals are transmitted from the missile to the target and reflected to the missile to direct it toward the target. 2. Homing in which the homing device on the missile reveals the presence of the missile to the target. ('ak-tiv 'hōm-ing)

active illumination [ENG] Lighting whose direction, intensity, and pattern are controlled by commands or signals. ('ak-tiv ə,lüm'-ə'nāshən)

active immunity [IMMUNOL] Disease resistance in an individual due to antibody production after exposure to a microbial antigen following disease, inapparent infection, or inoculation. ('ak-tiv im'yūnətē)

active infrared detection system [ENG] An infrared detection system in which a beam of infrared rays is transmitted toward possible targets, and rays reflected from a target are detected. ('ak-tiv 'in-frā-red dī'tek-shən,sistəm)

active jamming See jamming. ('ak-tiv 'jam-inj)

active layer [GEOL] That part of the soil which is within the suprapermafrost layer and which usually freezes in winter and thaws in summer. Also known as frost zone. ('ak-tiv 'lār)

active leaf [MILLING] In a door with two leaves, the leaf which carries the latching or locking mechanism. Also known as active door. ('ak-tiv 'lēf)

active leg [ELECTR] An electrical element within a transducer which changes its electrical characteristics as a function of the application of a stimulus. ('ak-tiv 'leg)

active location system [NAV] A navigation system in which the navigation satellite interrogates the craft, and the craft re-

sponds; useful for surveillance by a ground station, or for automated navigation if the satellite subsequently transmits data. ('ak-tiv lō'kā-shən,sistəm)

active logic [ELECTR] Logic that incorporates active components which provide such functions as level restoration, pulse shaping, pulse inversion, and power gain. ('ak-tiv 'läj-ik)

active margin [GEOL] A continental margin that is characterized by earthquakes, volcanic activity, and orogeny resulting from movement of tectonic plates. ('ak-tiv 'mär-jən)

active master file [COMPUT SCI] A relatively active computer master file, as determined by usage data. ('ak-tiv 'mästər 'fil)

active master item [COMPUT SCI] A relatively active item in a computer master file, as determined by usage data. ('ak-tiv 'mästər 'itm)

active material [ELEC] 1. A fluorescent material used in screens for cathode-ray tubes. 2. An energy-storing material, such as lead oxide, used in the plates of a storage battery. 3. A material, such as the iron of a core or the copper of a winding, that is involved in energy conversion in a circuit. 4. In a battery, the chemically reactive material in either of the electrodes that participates in the charge and discharge reactions. [ELECTR] The material of the cathode of an electron tube that emits electrons when heated. [NUCLEO] A material capable of releasing substantial quantities of nuclear energy during fission. ('ak-tiv 'mä-tirē-əl)

active mirror [OPTICS] A mirror whose position and shape are continually adjusted in response to changing environmental conditions in order to obtain optimum performance. ('ak-tiv 'mirər)

active permafrost [GEOL] Permanently frozen ground (permafrost) which, after thawing by artificial or unusual natural means, reverts to permafrost under normal climatic conditions. ('ak-tiv 'pər-mäfrōst)

active power [ELEC] The product of the voltage across a branch of an alternating-current circuit and the component of the electric current that is in phase with the voltage. ('ak-tiv 'pau̇r)

active prominence [ASTRON] A classification of prominences of the sun; such a prominence is rapidly moving, and is the most frequent type. ('ak-tiv 'präm-ənəns)

active prominence region [ASTRON] Portions of the solar limb that display active prominences, characterized by down-flowing knots and streamers, sprays, frequent surges, and curved loops. Abbreviated APR. ('ak-tiv 'präm-ənəns ,rē-jən)

active region [ASTRON] A localized, transient, nonuniform region on the sun's surface, penetrating well down into the lower chromosphere. [ELECTR] The region in which amplifying, rectifying, light emitting, or other dynamic action occurs in a semiconductor device. ('ak-tiv 'rē-jən)

active satellite [AERO ENG] A satellite which transmits a signal. ('ak-tiv 'sā-təlit)

active site [CHEM] The effective site at which a given heterogeneous catalytic reaction can take place. Also known as active center. [MOL BIO] The region of an enzyme molecule at which binding with the substrate occurs. Also known as binding site; catalytic site. ('ak-tiv 'sīt)

active sludge [CIV ENG] A sludge rich in destructive bacteria used to break down raw sewage. ('ak-tiv 'slüj)

active solar system [MECH ENG] A solar heating or cooling system that operates by mechanical means, such as motors, pumps, or valves. ('ak-tiv 'sō-lär,sistəm)

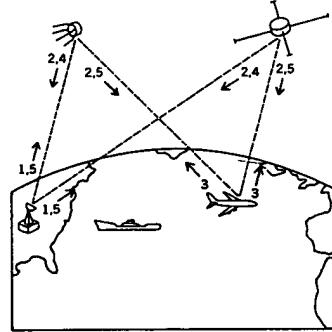
active solid [CHEM] A porous solid possessing adsorptive properties and used for chromatographic separations. ('ak-tiv 'säl'dəd)

active sonar [ENG] A system consisting of one or more transducers to send and receive sound, equipment for the generation and detection of the electrical impulses to and from the transducer, and a display or recorder system for the observation of the received signals. ('ak-tiv 'sō-när)

active sound cancellation [ACOUS] Any technique in which a control sound source creates sound in a selected region equal in amplitude and opposite in phase to sound that would otherwise exist, but this sound cancellation cannot be maintained in the presence of system changes unless there is also a feedback mechanism. ('ak-tiv 'saud,kān-sə,lā-shən)

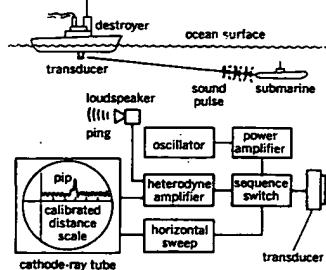
active sound control [ACOUS] Any modification of sound fields by loudspeakers, controlled, for example, through the use

ACTIVE LOCATION SYSTEM



Sequence of events in active location procedure for traffic control showing the relay of questions and answers between the plane, the satellites, and the ground station.

ACTIVE SONAR



Active sonar system. (From H. F. Olson, *Acoustical Engineering*, 3d ed., Van Nostrand, 1957)

of direct-current power; the pass element is driven by the fed error signal to increase its resistance when the output is lowered or to decrease its resistance when the output is raised. { 'pas-ə-mənt }

passenger car [ENG] 1. A railroad car in which passengers ride. 2. An automobile for carrying as many as nine passengers. { 'pas-ən-jər, kär }

passenger ship [NAV ARCH] A ship used primarily to carry passengers. { 'pas-ən-jər ship }

passenger seat [VERT ZOO] The equivalent name for Oscines. { 'pas-ən-jər sēt } See *oscine*.

Passeriformes [VERT ZOO] A large order of perching birds having two major divisions: Suboscines and Oscines. { 'pas-ər-fōrmēz } See *oscine*.

passiflora family [BOT] A family of dicotyledonous, often climbing plants in the order Violales; flowers are polypetalous, pugnacious with a corona, and seeds are arillate with an apocarpous placentation. { 'pas-ə-flōrə, fē-mēlē } See *passion flower*.

passing point [MIN ENG] The point at which two vehicles, coal cars or mine elevators, pass each other while going in opposite directions. { 'pas-ing, pōint }

passing track [ENG] A sidetrack with switches at both ends. { 'pas-ing trak } See *switchback*.

passivation [ELECTR] Growth of an oxide layer on the surface of a conductor to provide electrical stability by isolating the conductor surface from electrical and chemical conditions in the environment; this reduces reverse-current leakage, increases breakdown voltage, and raises power dissipation rating. { 'pas-ə-tāvāshən } See *barrier passivation*.

passivation potential [PHYS CHEM] The potential corresponding to the critical anodic current density of an electrode that behaves in an active-passive manner. { 'pas-ə-tāvāshən pōtēntēl } See *anodic passivation*.

passive accommodation [CONT-SYS] The alteration in the angle or motion of the end point of a robot manipulator arm from bending or deforming of the manipulator arm in response to forces exerted on the robot. { 'pas-iv 'däk'om-ə-dāshən }

passive cell [MET] An electrochemical corrosion cell between passive and active areas on a metal surface. { 'pas-iv sel } See *galvanic cell*.

passive aggressive personality [PSYCH] A personality characterized by the passive expression of hostility andiveness, as by stubbornness, pouting, or inefficiency. { 'pas-iv 'aggrəs-əv, pəsən-al-ədē } See *hostile aggression*.

passive anaphylaxis [IMMUNOL] Anaphylaxis elicited by sensitization with antibodies followed by injection of corresponding sensitizing antigen. { 'pas-iv, an-əfə'lak-sis } See *anaphylactic reaction*.

passive AND gate [ELECTR] See *AND gate*. { 'eng] A device which achieves an output signal, by stream interaction, when both of two control signals appear simultaneously. { 'pas-iv 'and, gät } See *AND gate*.

passive antenna [ELECTROMAG] An antenna which influences the directivity of an antenna system but is not directly fed to a transmitter or receiver. { 'pas-iv an-tē-nə }

passive antiroll system [NAV ARCH] A system of antiroll effected by a channel that is sized so that the flow of the roll of phase with the roll of the ship. { 'pas-iv, an-tēlōl } See *antiroll system*.

passive armor [ORD] A protective device against shaped ammunition, designed to absorb the energy of a shaped charge. { 'pas-iv 'är-mər } See *shape charge*.

passive communications satellite [AERO ENG] A satellite that communicates signals between stations, without amplification; an example is the Echo satellite. { 'pas-iv kō-mü-nikā-shən, sat-ə-līt } See *communications satellite*.

passive component See *passive element*. { 'pas-iv, kōm-pō-nēnt } See *component*.

passive congestion [MED] An increased content of blood in an other body part due to impaired return of venous blood. { 'pas-iv kōn'jeshən } See *congestion*.

passive corner reflector [ELECTROMAG] A corner reflector that is energized by a distant transmitting antenna; used chiefly to improve the reflection of radar signals from objects that would not otherwise be good radar targets. { 'pas-iv 'kōrnər ri-flek-tər } See *corner reflector*.

passive cutaneous anaphylaxis [IMMUNOL] The vascular reaction at the site of intradermally injected antibody when, 3 hours later, the specific antigen, usually mixed with Evans blue dye, is injected intravenously. { 'pas-iv, kyū-tā-nē-əs, an-əfə'lak-sis } See *anaphylaxis*.

passive-dependent personality [PSYCH] A character disorder marked by a behavioral pattern characterized by a lack of self-confidence, indecisiveness, and a tendency to cling to and seek support from others. { 'pas-iv di-pen'dənt, 'pas-ən-al-ədē } See *dependent personality*.

passive detection [ORD] The detection of a target or other object by means that do not reveal the position of the detecting instrument. { 'pas-iv di-tek-shən }

passive device [COMPUT SCI] A unit of a computer which cannot itself initiate a request for communication with another device, but which honors such a request from another device. { 'pas-iv di'ves } See *active device*.

passive double reflector [ELECTROMAG] A combination of two passive reflectors positioned to bend a microwave beam over the top of a mountain or ridge; generally without appreciably changing the general direction of the beam. { 'pas-iv 'dō-bl ri-flek-tər } See *double reflector*.

passive earth pressure [CIV ENG] The maximum value of lateral earth pressure exerted by soil on a structure, occurring when the soil is compressed sufficiently to cause its internal shearing resistance along a potential failure surface to be completely mobilized. { 'pas-iv 'ērth preshər } See *earth pressure*.

passive electronic countermeasures [ELECTR] Electronic countermeasures that do not radiate energy, including reconnaissance or surveillance equipment that detects and analyzes electromagnetic radiation from radar and communications transmitters, and devices such as chaff which return spurious echoes to enemy radar. { 'pas-iv i-lek'trō-nik 'kaunt-ər mezhrəz } See *ECM*.

passive element [ELEC] An element of an electric circuit that is not a source of energy, such as a resistor, inductor, or capacitor. Also known as *passive component*. { 'pas-iv 'el-ə-mənt } See *parasitic element*.

passive filter [ELEC] An electric filter composed of passive elements, such as resistors, inductors, or capacitors, without any active elements, such as vacuum tubes or transistors. { 'pas-iv fil'tər } See *filter*.

passive fold [GEOL] A fold in which the mechanism of folding, either flow or slip, crosses the boundaries of the strata at random. { 'pas-iv 'fōld } See *fold*.

passive front See *inactive front*. { 'pas-iv 'frōnt } See *front*.

passive glacier [HYD] A glacier with sluggish movement, generally occurring in a continental environment at a high latitude, where both accumulation and ablation are minimal. { 'pas-iv 'glāshər } See *glacier*.

passive guidance [NAV] Guidance of a vehicle by preset or inertial devices, without reliance on external signals or observations. { 'pas-iv 'gīd-əns } See *guidance*.

passive homing [NAV] The homing of an aircraft or spacecraft wherein the craft directs itself toward its destination by receiving radio emission from a base station without the necessity of initiating the transmission by sending an interrogating signal from the craft. { 'pas-iv 'hōm-ing } See *homing*.

passive immunity [IMMUNOL] 1. Immunity acquired by injection of antibodies in another individual or in an animal. 2. Immunity acquired by the fetus by the transfer of maternal antibodies through the placenta. { 'pas-iv i-myūn-ədē } See *immunity*.

passive jamming [ELECTR] Use of confusion reflectors to return spurious and confusing signals to enemy radars. Also known as mechanical jamming. { 'pas-iv 'jam-in } See *jamming*.

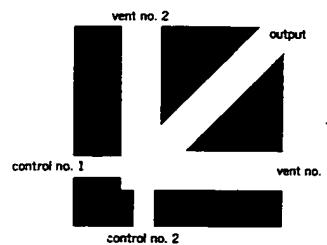
passive junction [ELECTROMAG] A waveguide junction that does not have a source of energy. { 'pas-iv 'jōnk-shən } See *waveguide junction*.

passive margin [GEOL] A continental margin formed by rifting during continental breakup. { 'pas-iv 'mär-jən } See *margin*.

passive metal [MET] A metal on which a surface film forms by natural process or by immersion in a passivating solution, making the metal resistant to corrosion. { 'pas-iv 'mētəl } See *metallurgy*.

passive method [CIV ENG] A construction method in permafrost areas in which the frozen ground near the structure is not disturbed or altered, and the foundations are provided with

PASSIVE AND GATE



Passive AND gate, a type of fluidic element. When only one control signal appears it attaches to opposite wall and vents, producing no output. Output is achieved when both controls appear simultaneously.

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ac receiver

mate position data to a fire-control or missile-guidance radar, which then takes over the function of tracking the target.

ac receiver—A radio receiver designed to operate from an ac source only.

ac reclosing relay—A device which controls the automatic reclosing and locking out of an ac circuit interrupter.

ac relay—A relay designed to operate from an alternating-current source.

ac resistance—Total resistance of a device in an ac circuit. (*Also see High-Frequency Resistance.*)

across-the-line starting—Connection of a motor directly to the supply line for starting. (*Also called full-voltage starting.*)

ac time overcurrent relay—A device which has either a definite or an inverse time characteristic and functions when the current in an ac circuit exceeds a predetermined value.

actinic—In radiation, the property of producing a chemical change, such as the photographic action of light.

actinium—A radioactive element discovered in pitchblende by the French chemist Debierne in 1889. Its atomic number is 89; its atomic weight, 227.

actinodielectric—A photoconductive dielectric.

actinoelectric effect—The property of some special materials whereby when an electric current is impressed on them, their resistance changes with light.

actinoelectricity—Electricity produced by the action of radiant energy on crystals.

actinometer—An instrument that measures the intensity of radiation by determining the amount of fluorescence produced by that radiation.

action area—In the rectifying junction of a metallic rectifier, that portion which carries the forward current.

action current—A brief and very small electric current which flows in a nerve during a nervous impulse.

action potential—1. The instantaneous value of the voltage between excited and resting portions of an excitable living structure. 2. The voltage variations in a nerve or muscle cell when it is excited or "fired" by an appropriate stimulus. After a short time, the cell recovers its normal resting potential, typically about 80 millivolts. The interior of the cell is negative relative to the outside.

activation—1. Making a substance artificially radioactive by placing it in an accelerator such as a cyclotron, or by bombarding it with neutrons. 2. To treat the cathode or target of an electron tube in order to create or increase its emission. 3. The process of adding electrolyte to a cell to make it ready for operation.

activation time—The time interval from the moment activation is initiated to the moment the desired operating voltage is obtained in a cell or battery.

active jamming

activator—An additive that improves the action of an accelerator.

active—1. Controlling power from a separate supply. 2. Requiring a power supply separate from the controls.

active area—The portion of the rectifying junction of a metallic rectifier that carries forward current.

active balance—In operation of a telephone repeater, the summation of all return currents at a terminal network balanced against the local circuit or drop impedance.

active communications satellite—A communications satellite in which on-board receivers and transmitters receive signals beamed at them from a ground terminal, amplify them greatly, and retransmit them to another ground terminal. Less sensitive receivers and less powerful transmitters can be used on the ground than are needed for passive satellites.

active component—1. An electrical or electronic element capable of controlling voltages or currents to produce gain or switching action in a circuit (e.g., transistor, vacuum tube, or saturable reactor). Also called active device, or active element. 2. A device, the output of which is dependent on a source of power other than the main input signal.

active computer—The one of two or more computers in an installation that is on-line and processing data.

active current—In an alternating current, a component in phase with the voltage. The working component as distinguished from the idle or wattless component.

active decoder—A device that is associated with a ground station and automatically indicates the radar beacon reply code that is received in terms of its number or letter designation.

active device—*See Active Component.*

active ECM—*See Jamming.*

active electric network—An electric network containing one or more sources of energy.

active element—*See Active Component.*

active filter—A device employing passive network elements and amplifiers. It is used for transmitting or rejecting signals in certain frequency ranges, or for controlling the relative output of signals as a function of frequency.

active guidance—*See Active Homing.*

active homing—Also called active guidance. A missile system using a radar system in the missile itself to provide target information and to guide itself to the target.

active infrared detection—An infrared detection system in which a beam of infrared rays is transmitted toward one or more possible targets, and the rays reflected from the target are detected.

active jamming—Intentional radiation or reradiation of electromagnetic waves to impair the use of a specific portion of the electromagnetic-wave spectrum.

active leg—*V element whi teristics as a bus.*

active line—*the tv pictu curring duri tical retrac active main during whic an item fro rence of fail normal ope ventive and*

active mate—*battery, lea substance v duce electr material, su the screen <*

active mixe—*quiring a using nonli odyne or c signals.*

active netw—*sive and ac*

active press—*sure which guished fro the circuit.*

active pull—*transistor i sistor in a provide lov power cons*

active RC—*resistors, ca*

active repa—*tive maint repair wo including replacement and final t procuremen conditions.*

active sat—*regenerates stations. Se*

active sona—*active sub*

active sub—*active elem or integra substrates resistors, these elec substrates fields are or memor*

active sv—*radar—A lance. It p*

active sys—*tion of hig locations l*

active syst—*which req*

partition noise

partition noise—A noise caused in an electron tube by random fluctuations as the electron stream divides between the electrodes. It is more pronounced in pentodes and tetrodes than in triodes.

part programmer—One who translates the physical operations for machining a part into a series of mathematical steps and then prepares the coded computer instructions for those steps.

parts density—The number of parts in a unit volume.

party line—A telephone line serving more than one subscriber, with discriminatory ringing for each.

Paschen's law—The sparking potential between two terminals in a gas is proportional to the pressure times the spark length. For a given voltage, this means the spark length is inversely proportionate to the pressure.

pass—One cycle of processing of a body of data.

passband—The band of frequencies which will pass through a filter with essentially no attenuation.

passband ripple—In a filter, the difference, in dB, between the minimum loss point and the maximum loss point in a specified bandwidth.

pass element—An automatic variable resistance device, either a vacuum tube or power transistor, in series with the source of dc power. The pass element is driven by the amplifier error signal to increase its resistance when the output needs to be lowered or to decrease its resistance when the output must be raised. *See also Series Regulator.*

passivation—The growth of an oxide layer on the surface of a semiconductor to provide electrical stability by isolating the transistor surface from electrical and chemical conditions in the environment. This reduces reverse-current leakage, increases breakdown voltages, and raises the power dissipation rating.

passive—An inert component which may control, but does not create or amplify energy.

passive communication satellite—A communication satellite which simply reflects a signal without amplification. In essence, it is a radio mirror. It requires a large reflecting surface and large, high-powered, complex ground stations.

passive component—A nonpowered component generally presenting some loss (expressed in dB) to a system.

passive decoder—A device that is set so that only one specific reply code will pass a decoder and give an output from one decoder for display.

passive detection—Detection of a target by reception of signals emitted by the target rather than by means involving a signal source independent of the target.

passive device—A device which exhibits no

patch

transistance. It has no gain or control and does not require any input other than a signal to perform its function. Examples of passive devices are conductors, resistors, and capacitors.

passive electric network—An electric network with no source of energy.

passive element—1. A parasitic element. 2. A circuit element with no source of energy (e.g., a resistor, capacitor, inductor, etc.).

passive film circuit—A thin- or thick-film circuit network consisting entirely of passive circuit elements and interconnections.

passive homing system—A guidance system based on the sensing of energy radiated by the target. (*See also Active Homing and Homing Guidance.*)

passive network—A network with no source of energy.

passive pull-up—A gate output circuit in which the charging current for a load capacitance is obtained through a resistor.

passive reflector—A reflector often used on microwave relay towers to change the direction of a microwave. This permits convenient location of transmitter, repeater, and receiver equipment on the ground rather than at the tops of towers.

passive satellite—A satellite that reflects, without amplification, communications signals from one ground station to another.

passive sonar—*See Sonar.*

passive substrate—A substrate that may serve as a physical support and thermal sink for a thick- or thin-film integrated circuit but does not exhibit transistance. Examples of passive substrates are glass, ceramic, alumina, etc.

passive system—A system that emits no energy and therefore does not reveal its position or existence.

passive tracking system—Usually a system that tracks by reflected radiation from some external source, or by the jet emission of the vehicle (e.g., optical systems, use of commercial radio or television, reflection and infrared systems).

passive transducer—A transducer, the output waves of which are independent of any sources of power controlled by the actuating waves.

paste—In batteries, the medium, in the form of a paste or jelly, containing an electrolyte. It is positioned adjacent to the negative electrode of a dry cell. In an electrolytic cell, the paste serves as one of the conducting plates.

pa system—Abbreviation for public-address system.

patch—1. To connect circuits together temporarily with a special cord known as a patch cord. 2. In a computer, to make a change or correction in the coding at a particular location by inserting transfer instructions at that location and by adding elsewhere the new instructions and the replaced instructions. This procedure is usu-

ally used during coding so inser

patch board—A

are terminated

patch cord—So

cord. A short c

clips on one e

ing two pieces

a phonograph

fier and speake

patching—Conn
together tempc
cord.

patching jack—
circuit element

patch panel—It
contains means
urations; usual
into which jui

path—1. In na
connecting a s
constituting a
2. *See Channel,*
path attenuati
transmitter and
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that permits re
tral location in
as heart rate, 1
etc.

pattern—1. The
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showing the lo
guide for that
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qualities of an